

## 1045 A Detailed Prompts

### 1046 Prompt 1: Task Instruction

1047 Your task is to recommend a user's next point-of-interest (POI) from the candidate POIs  $\{L\}$   
 1048 by analyzing the users' preferences on category, region, and distance.

### 1050 Prompt 2: Category Preference Probing

1051 Given the user's Category sequence:  $\{C_u\}$ , what is the user's categorical transition preference?  
 1052 Considering: what are the 'category pairs' the user usually visits consecutively?  
 1053 (format:[category-category...])

1054 What is the user's categorical temporal preference? Considering: what are the 'categories' the user visits at a certain time (day/ hour)? (format:[time: [categories]])

### 1055 Prompt 3: Region Preference Probing

1056 Given the user's Region sequence:  $\{R_u\}$ , what is the user's regional transition preference?  
 1057 Considering: what are the 'region pairs' the user usually visits consecutively? (format:[region-region...])

1058 What is the user's regional temporal preference? Considering: what are the 'regions' the user visits at a certain time (day/ hour)? (format:[time: [regions]])

### 1063 Prompt 4: Distance Preference Probing

1064 Given the user's Distance sequence:  $\{D_u\}$ , what is the user's distance temporal preference?  
 1065 Considering: what are the 'distances' the user usually visits at a certain time (day/ hour)?  
 (format:[time: [distances]])

### 1067 Prompt 5: Category Preference Prediction

1068 The user has visited categories  $\{C_u^{cur}\}$ . Now is [day] at [hour], based on the user's categorical  
 1069 transition preference and categorical temporal preference, predict users' next most likely  
 1070 visiting 'category'. (format:category)

### 1072 Prompt 6: Category Preference Reflection

1073 The user actually visited category  $[c_{t_n}]$ .  
 1074 Based on the actual visited category, what is the new insight you can get for the user's categorical transition preference? Generate the updated categorical transition preference.  
 1075 (format:[category-category...])  
 1076 What is the new insight for the user's categorical temporal preference? Generate the updated categorical transition preference. (format:[time: [categories]])

### 1078 Prompt 7: Region Preference Prediction

1079 The user has visited regions  $\{R_u^{cur}\}$ . Now is [day] at [hour], based on the user's regional  
 1080 transition preference and regional temporal preference, predict users' next most likely visiting  
 1081 'region'. (format:region)

### 1084 Prompt 8: Region Preference Reflection

1085 The user actually visited region  $[r_{t_n}]$ .  
 1086 Based on the actual visited region, what is the new insight you can get for the user's regional transition preference? Generate the updated regional transition preference. (format:[region-region...])  
 1087 What is the new insight for the user's regional temporal preference? Generate the updated regional temporal preference. (format:[time: [regions]])

### 1091 Prompt 9: Distance Preference Prediction

1092 Given the user's Distance sequence:  $\{D_u\}$ , what is the user's distance temporal preference?  
 1093 Considering: what are the 'distances' the user usually visits at a certain time (day/ hour)?  
 1094 (format:[time: [distances]])

### 1096 Prompt 10: Distance Preference Reflection

1098 The user actually visited distance  $[d_t]$ .  
 1099 Based on the actual visited distance, what is the new insight for the user's distance temporal preference? Generate the updated distance temporal preference. (format:[time: [distance]])

### 1103 Prompt 11: Categorical Transition Preference Summarization

1104 The users' geographical neighbors' categorical transition preferences are  $\{preferences\}$ ; the  
 1105 users' semantic neighbors' categorical transition preferences are  $\{preferences\}$ ; the users' social  
 1106 neighbors' categorical transition preferences are  $\{preferences\}$ . Summarize the neighbors' categorical  
 1107 transition preferences by considering their commonalities (format: [category-category...]).

### 1108 Prompt 12: Categorical Temporal Preference Summarization

1109 The users' geographical neighbors' categorical temporal preferences are  $\{preferences\}$ ; the  
 1110 users' semantic neighbors' categorical temporal preferences are  $\{preferences\}$ ; the users' social  
 1111 neighbors' categorical temporal are  $\{preferences\}$ . Summarize the neighbors' categorical temporal by  
 1112 considering their commonalities (format: [time:[categories]]).

### 1113 Prompt 13: Regional Transition Preference Summarization

1114 The users' geographical neighbors' regional transition preferences are  $\{preferences\}$ ; the users'  
 1115 semantic neighbors' regional transition preferences are  $\{preferences\}$ ; the users' social neighbors'  
 1116 regional transition preferences are  $\{preferences\}$ . Summarize the neighbors' regional transition  
 1117 preferences by considering their commonalities (format: [region-region...]).

### 1118 Prompt 14: Regional Temporal Preference Summarization

1119 The users' geographical neighbors' regional temporal preferences are  $\{preferences\}$ ; the users'  
 1120 semantic neighbors' regional temporal preferences are  $\{preferences\}$ ; the users' social neighbors'  
 1121 regional temporal preferences are  $\{preferences\}$ . Summarize the neighbors' regional temporal  
 1122 preferences by considering their commonalities (format: [time:[regions]]).

### 1123 Prompt 15: Distance Temporal Preference Summarization

1124 The users' geographical neighbors' distance temporal preferences are  $\{preferences\}$ ; the users'  
 1125 semantic neighbors' distance temporal preferences are  $\{preferences\}$ ; the users' social neighbors'  
 1126 distance temporal preferences are  $\{preferences\}$ . Summarize the neighbors' distance temporal  
 1127 preferences by considering their commonalities (format: [time:[distances]]).

### 1128 Prompt 16: Next Category Prediction

1129 Now is [day] at [hour], based on the users' current category sequence  $\{C_u^{cur}\}$ , his own categorical  
 1130 transition preference and categorical temporal preference, and his neighbors' categorical  
 1131 transition preference and categorical temporal preference, predict the user's next most likely  
 1132 visiting 'category'. (format: category)

### 1133 Prompt 17: Next Region Prediction

1134 Now is [day] at [hour], based on the users' current region sequence  $\{R_u^{cur}\}$ , his own regional  
 1135 transition preference and regional temporal preference, and his neighbors' regional transition  
 1136 preference and regional temporal preference, predict the user's next most likely visiting 'region'.  
 1137 (format: region)

### 1139 Prompt 18: Next Distance Prediction

1140 Now is [day] at [hour], based on the users' current distance sequence  $\{D_u^{cur}\}$ , his own distance  
 1141 temporal preference, and his neighbors' distance temporal preference, predict the user's next  
 1142 most likely visiting 'distance'. (format: distance)

### 1144 Prompt 19: Next POI Recommendation

1145 Given users' current check-in sequence  $\{L_u^{cur}\}$ , recommend 10 POIs from  $\{L\}$  considering his  
 1146 next likely visiting category, region, and distance. State the reason for each recommendation  
 1147 and rank the importance of category, region, and distance preferences. (format: [POI: reason;  
 1148 [importance ranking]])